

Evaluate the Relationship between Company Performance and Stock Market Liquidity

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Abstract In this paper, the relationship between performance and liquidity of shares listed on the Tehran Stock Exchange investigated. In countries where the capital market is one of the main sources of financing units their business, a lot of research is in this field, that the rapid growth of the capital market in Iran, the necessity of such research is more evident. The present study with examined data from 154 companies listed in Tehran Stock Exchange between 1383 and 1388 with the combinational methods, the relationship between business performance and liquidity has been studied. This study supports the theory of representation and feedback between performance scales and stock Liquidity, using by multiple regressions has been evaluated and compared. The results of investigation show that between the liquidity and performance scales a strong correlation was observed. By comparing the two performance measures (return on assets and Q Tobin index) indicators that Q Tobin index is better to use of market values, because that more suitable for studying the relationship between performance and the company's liquidity.

Key words Agency theory, Feedback theory, Stock Market Liquidity and unit commercial performance

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1. Introduction

There are many theoretical reasons for assuming that liquidity directly affects the performance the company is located. Stock is securities that in addition to providing liquidity, voting and exercising also be monitored. This paper deals will play a major role in monitoring, evaluation and performance. Theoretical analysis suggests that liquidity allow to small shareholders to become major shareholders, salaries and benefits improve their management, and aware investors to make informed encourage them to deal. Thus, a positive relationship between liquidity and performance would not be far-fetched (Fang, *et al*, 2009).

As a definition, we can say that liquidity is investors' ability to make financial assets to cash at the same price in last traded (Shirazian, 1384). On the other hand the company's performance is result from return of investment activities in a given period.

Commercial units are products of contracts between individuals such as owners, managers, customers, suppliers and employees will be made.

Based on agency theory, individuals seek to maximize their own benefits, but these interests may not be aligned. So the contracts between the owner and the manager were very important and Investors are always looking for ways to align these interests. In many ways, such as research related to the management of this company with the rights and benefits provided. Thus the performance improvement of the business and thus increase firm value will peak the interests of both the owner and manager. Agrarwal *et al*. (1996) as a research and performance monitoring mechanisms of agency problems between managers and shareholders, to the issue of pay. Their used seven of the regulatory mechanism (institutional investors, internal stakeholders (management), major shareholders, board members, borrowing policies, Labor market for directors and corporate control activity) in the model. They found that the performance criteria

for regulatory factors (internal stakeholders (management) board members, policy of borrowings and operating control of the company) have a significant relationship.

In contrast agency theory, another theory has been proposed as a theory of feedback in this regard. In researches, such as Subrahmanyam, *et al.* (2001) and Khanna, *et al.*, (2004) shown that even in the absence of a conflict of interest between owners and managers, the Liquidity can be a positive influence on firm performance. So that leads to an improved performance and increased demand from shareholders in capital market transactions, the value company will be followed improve. Rabin in 2007 research as ownership concentration, ownership and liquidity levels, said liquidity stated that often institutional investors and local stakeholders (management) is associated with the company. He reported in research the positive relationship between liquidity to institutional investors and the negative relationship between liquidity and significant investments. Elyasiani, *et al*, (2010) and colleagues examined the relationship between stability of the company with different levels of ownership. They found that between the Constancy (Stability) of institutional ownership and firm performance is a positive relationship.

In this paper using two performance criteria (return on assets and Q Tobin index) indicators that in previous criteria as important of firm performance used, in four criteria of liquidity (bid ask spread, the real volume stock trading, stock turnover and number of transactions) to investigate the relationship between performance and liquidity based on agency theory and the feedback theory explored.

2. The theoretical background of the research

Relationship between liquidity and performance in economic sciences attention from different approaches. In previous studies, most researchers view of agency theory, evaluation liquidity performance operation, for example, Maug, in 1998 studied the price increases caused by investors monitor on the activities, concluded that companies with liquidity shares have governance stronger. Palimeter in 2002, with study of salary and benefits of management and stock prices came to the conclusion that if salaries and benefits of management be dependent of stock price, company value increased with appropriate decision of managers. So what was said can be concluded that the relationship between liquidity and Stock performance achieved by extending the concept of conflict of interest between owners and managers with regard to agency theory specifics. Wang investigated the relationship between liquidity and operating performance and value of companies with companies in Taiwan and Japan is discussed in an article under the same title. He for his target used from return on assets and return on equity criteria for company operation, and resulted the companies that used aggressively in liquidity management, the ability to improve operation performance and lead in increase the company value. However, the financial system and structural characteristics of the two countries were different from each other. On the other hand, can be said theoretically based on the feedback that the liquidity is reflects of activities (performance) of the company's shares traded. Many research confirmed this subject. Coffe in 1991, and Bhide in 1993, founded that liquidity is a facilitator for stock trade by outside shareholders (investors). Fang, *et al*, in 2009 also by using the feedback theory reported positive relationship between liquidity and performance. They found that firms with better disclosure performance are trying to attract institutional investors. The operating causes that major shareholders in incommmodity from company's performance easily sell their stock.

2.1. Agency theory

The agency theory today is theoretical basis of accounting research. This theory resulted from of the separation of management and ownership interests in the modern companies considered, where the owners out of participate and not intervene in the company's management decisions. The basic premise of this theory, is individuals act to maximize their self-interest, the benefits that can sometimes conflict with the maximize interests of shareholders and the company. One of the assumptions of agency theory is that management trying to their wealth through at least agencies different costs of the monitor to the maximum. Of course, this does not mean to say that the management to the maximum value of the company, but the management is trying to maximize their own rewards and this should be in form of increase the net profit, return on investment (performance) or other accounting standards and such efforts to create positive change in the price of securities (Karami *et al.*, 1387). In other words, managers try to

maximize their profit, companies' performance to improve, and this improvement from the informed investors considers and to increase the share traded.

2.2. Feedback theory

Feedback theory that describes the position that output of an event or phenomenon in the past will influence the occurrence or occurrences of the same event. When an event is part of a chain of cause and effect the shape is a circuit or loop. A feedback mechanism is process or signal to the monitoring system that back itself. Positive feedback cause the improvement from previous events and, against negative feedback cause of weaken previous event. Feedback is revealed that cognitive factors and the behavior; in fact, we can said economic application of this theory to the field of behavioral finance.

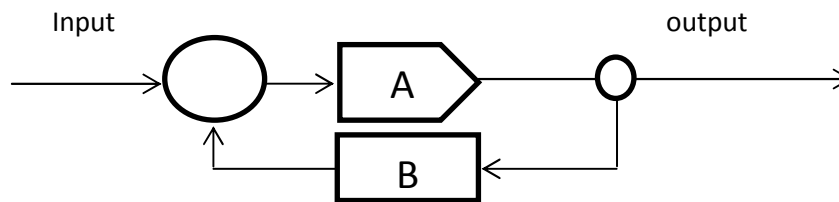


Figure 1. Feedback ideal model. When $B < 0$ feedback is negative

Feedback ideal model in Figure 1 is shown. As can be seen, in this system, in addition to the input, processing and output operations, there is a feedback process. Feedback process is designed to reflect the output results. Thus, after that phase of the operation processing, the results are analyzed and then a step back (Dijk, *et al.*, 2008). In other words, if we know, the output of the system resulted of company performance, the informed investors by increase or decrease of their dealings, sending a positive and negative feedback to the company. On this basis, and regardless of agency theory, we can conclude that these companies with a better performance, attracting an informed investors and this factor cause of creating demand and increased investors' trade.

2.3. Liquidity

Liquidity is the ability of an asset or process buying or selling the property in less time and cost possible. Although this statement seems greatly appreciate and clear, but in many liquidity and financial documents of a concept is called easy and elusive, which means that the same easily understood in the context of trading liquidity, its criteria and calculation is complex. One of the main functions of the capital market is to provide liquidity. In fact, the secondary market in addition to provides liquidity, through price discovery and risk transfer capability reduces cost of capital. Fernandez from "Kinez" expressed, the liquidity are not absolute measurable criteria. In the financial literature some time to convey concept, stead of the word of liquidity from marketability term, or the ability to buy and sell used, because the number of buyers and potential vendors to be more of an asset, that asset liquidity is higher (Nobahar, 1388). Liquidity has many criteria, that one of its not to be able to criteria all the dimensions (Robin, 2007). Liquidity criteria can be divided into two groups:

- A) Criteria based on trade: including trading volume, trading frequency and transaction stock value.
- B) Criteria on order based: including the proposed price difference between supply and demand, the differences of effective demand and supply and market depth.

2.4. Performance

Many decisions are based on companies' performance. Performance is the factors that most creditors, investors, managers and other economic actors will be considered. When performance criteria rather than raw numbers are measured as percent or more, the possibility exists comes to performance, both large and small companies in various industries over a period of time, easier to assess and compare (Shanzarian, 1389).

In other words, the corporate performance is product of the activities and return on investment in a given period. In the financial literature, different criteria are used for measuring performance, such as

return on assets, Tobin index, investment return, return on equity, economic value added and earnings per share, that each of these criteria there are advantages and limitations. In this paper, two criteria for measuring the performance of asset returns and Tobin Q index used.

3. Research hypotheses

In this study, two hypotheses are tested below.

First hypothesis: the return on assets and liquidity of shares of listed companies in exchange existed significant relationship.

Second hypothesis: the Tobin index and the liquidity of shares of listed companies in exchange existed significant correlation.

4. Methods

This study is based on event past (using from past data) and the target application. In order to collect a library of methods has been used in the research literature. The method of used in this study is descriptive and correlational, and designs to examine the relationship between independent and dependent variables of the statistical regression applied. Data analysis method based on panel data. The population in this study is listed companies on Tehran Stock Exchange. Data on the supply and demand for shares of corporate from technology companies of Tehran Stock Exchange website address www.tsetmc.com and the rest of the new data has been extracted from the RahavardNovin program.

4.1. Variables measuring

Bid Ask Spread

The difference between the lowest price of proposed sale order and highest buy order, is called bid ask spread. The gap between demand and supply is low, the potential liquidity stocks has higher. In this investigation for determine of price range of the proposed purchase and sale of shares Ryan, 1996 and Stoll, 1989 model is used.

$$BASit = \frac{\text{average of proposed sale order in } t \text{ year} - \text{average of proposed buy order in } t \text{ year}}{(\text{average of proposed sale order in } t \text{ year} + \text{average of proposed buy order in } t \text{ year})/2} \times 100$$

Turnover Volume

This criterion obtained from the number of shares traded divided to the shares of the company's. Since this ratio is negatively correlated with the gap between supply and demand, in several studies used from it's as a liquidity measure. Higher than the number of shares traded in the stock is trading; it can be indicative higher ratio from liquidity (Nobahar, 1388). In this trade i relative volume of corporate transaction in t period obtained from dividend of the number of shares traded in the stock is trading in t year.

Dollar Volume

This standard is form of the traditional criteria for measuring liquidity. High measure of this criteria shown high liquidity of the shares. Its use to calculate the average price from the last price in everyday.

Number of transactions

Whatever the stock trading times is most, indicative of its liquidity. To calculate of the criteria in this study used from the total number of transactions in t year.

Return on assets

Return on assets ratio is a criterion that indicates the company has assets held what amount of income derived, or in other words what extent investment returns achieved. Since the comparison between the earnings of companies with large and small sizes, because of the difference in the amount of capital used, cannot be useful, it must be used from criteria that show proportion of capital gains used to obtain. On the other hand, if investment increasing not coordinated to benefit increases, its cannot to

maximize the benefits investors. Return on assets ratio, which allows us to understand the sources of the company what of efficient rate consumed, and the management what could have been optimum use of limited resources (Shanazaryan, 1389). Whatever this ratio be higher, the company performance is better.

$$ROA_{it} = \frac{\text{net profit in t year} + [(1 - \text{tax ratio in t year})]}{\text{total of assets in t year}} \times 100$$

Tobin's Q

Another important criterion for evaluating the companies' performance is Tobin's Q. When Tobin's Q index is greater than one, it indicates that the investment in assets has created income that it's worth more than the capital expenditure. In contrast, the Tobin's Q index is less than one, meaning that investing in property is not suitable and did not return. This coefficient is a good criterion for measuring performance on tests of hypotheses about agency problems (Klaus & Burcin, 2003). Tobin's Q as well is representative agency for opportunities to grow. Today the Tobin index is used to analyze the financial position in the company. The companies that have upper Tobin's Q (in terms of performance and investment opportunities) are more appropriate.

$$\text{Tobin's } Q_{it} = \frac{\text{average market value in t year} + \text{average debts book value in t year}}{\text{average asset book value in t year}}$$

Controlled variable

To in the study literature said based on the feedback theory informed investors causes to demand shares and increase its transactions. Also based on agency theory the representation. Institutional owners as a regulatory mechanism to improve corporate performance and improve performance and its causes to increase the company's liquidity. Thus, to the effect of these factors on performance and liquidity of stock corporate, in this study, from percentage of institutional ownership used as a control variable.

Model to test the hypothesis

To test of first hypothesis and secondary sequence used from (1) and (2) models:

Model (1):

$$ROA_{it} = \beta_1 + \beta_2 (BAS)_{it} + \beta_3 (TV)_{it} + \beta_4 (DV)_{it} + \beta_5 (NT)_{it} + \beta_6 (IO)_{it} + \varepsilon$$

Model (2):

$$\text{Tobin's } Q_{it} = \beta_1 + \beta_2 (BAS)_{it} + \beta_3 (TV)_{it} + \beta_4 (DV)_{it} + \beta_5 (NT)_{it} + \beta_6 (IO)_{it} + \varepsilon$$

4.2. Data collection

In this study, data for companies listed in Tehran Stock Exchange during from 1383 to 1388 were studied. In order to compare of strength increase of sampling with society, sampling selected done with the following restrictions:

- firms that end their fiscal year end of March each year.
- Companies that not except financial intermediaries (banks, insurance, investments, and leasing).
- Companies that their brands no longer hold, and their shares in the years of the study be traded.
- Companies that disclosed all of the necessary data.

Finally, 154 participants were selected according to the period of 5 years was considered, totally 770 data from year-company collection and analysis have been observed.

4.3. Analysis and Findings

4.3.1. Descriptive Statistics

Distributional and central parameters, in Table 1 are presented. The difference between the minimum and maximum data is showed of suitable range for use of the variables. Except of Variables institutional ownership, the remaining variables are the minimum standard deviation that shows of the sample data proper consistency is preferred. Variable criteria the number of transactions and value of

transactions will be not partial, so their standard deviation is different. However, the slenderness ratio indicates that they are suitable for data integration. Low space between of variables average and middle, indicated that it's have normal distribution, So that the standard error of the coefficient of skewness and kurtosis in the range of - 2 to + 2 is confirmed (Momeni *et al*, 1386).

Table 1. Descriptive Statistics

Variables	Number	Average	middle	Standard Deviation	Skewness	Standard error Skewness coefficient	Sprains	Standard error Slenderness ratio	min	max
Return on asset	770	0.16	0.14	0.12	0.68	0.088	2.28	0.176	(0.37247908)	0.63770370
Tobin's Q	770	1.74	1.39	1.16	3.41	0.088	17.15	0.176	0.56364642	11.7955727
Bid Ask Spread	770	2.09	1.90	1.11	1.71	0.088	7.97	0.176	-	10.9595819
The relative volume of transactions	770	0.15	0.07	0.22	3.20	0.088	12.92	0.176	0.00000115	1.78575380
Dollar Volume	770	159,687.72	17,914.81	455,502.23	5.27	0.088	33.49	0.176	0.21066000	4,163,350.00
Number of Transaction	770	3,853.10	1,034.00	7,694	3.83	0.088	18.33	0.176	1.00000000	70,083.0000
Institutional ownership	770	35.65	23.74	33.23	0.51	0.088	(1.26)	0.176	-	98.5000000

4.3.2. Correlation matrix

As shown in table 2 can be seen, the correlation coefficients between all data specified. Most of the independent variables are highly correlated with the dependent variables. It is noticeable in Table 2 that study variables are highly correlated with each other. Analysis shows that the only variable the gap between supply and demand of the dependent variable (performance) is not correlated, as to return on asset criteria not relevance, and to Q Tobin's has little correlation too, coefficient associated and the significant degree of correlation (error of 1%) of other variables shown to be reliable results. The highest correlation between liquidity measures and performance criteria related to the transaction value variable that the variable to return on assets and Q Tobin's 34 and 39% Correlated. Correlation coefficients of the control variables (institutional ownership) with performance criteria and liquidity communication and suggest that further research were in the literature. Correlation between these variables in the gap between supply and demand is not significant. Institutional ownership has the highest correlation with the number of transactions variable that reflect the nature and general purpose of the institutional investors.

Table 2. Correlation coefficient matrix

Variables		ROA	Tobin's Q	BAS	TV	DV	NT	IO
Return on asset	The Pirson correlation coefficient	1.00						
	The Significant							
Tobins Q	The Pirson correlation coefficient	.538**	1.00					
	The Significant	0.00						
Bid Ask Spread	The Pirson correlation coefficient	0.00	.072*	1.00				
	The Significant	0.95	0.05					
The relative volume of transactions	The Pirson correlation coefficient	.232**	.165**	.101**	1.00			
	The Significant	0.00	0.00	0.01				
	The Pirson correlation coefficient	.342**	.384**	.101**	.317**	1.00		
Dollar Volume	The Significant	0.00	0.00	0.01	0.00			
	The Pirson correlation coefficient	.239**	.140**	.105**	.271**	.676**	1.00	
Number of Transaction	The Significant	0.00	0.00	0.00	0.00	0.00		
	The Pirson correlation coefficient	.172**	.167**	0.05	.072*	.151**	.085*	1.00
Institutional ownership	The Significant	0.00	0.00	0.16	0.04	0.00	0.02	

**Correlation is significant at the 0.01 error level.
 *Correlation is significant at the 0.05 error level.

4.3.3. Regression Analysis

First Testing

The first hypothesis express that the between return on asset as dependent variable and liquidity criteria as independent variables, there is a significant relationship. On the right side of the table 3 of the Fisher statistic indicates that a strong linear relevant exist between the variables in the model. As can be seen in the table above adjusted R square of 55%, is confirming the described above of model. Therefore, we can conclude in this case there is no reason to reject the first hypothesis. By study of significant coefficient so the variable scan is found that return on assets with worth transactions variable, number of transactions and institutional ownership has a positive and significant relationship. But the results show no significant relationship between these performance criteria and the supply and demand gap and turnover transactions.

The second hypothesis test

The second hypothesis tested the relationship between the criteria of Q Tobin's and liquidity criteria. In section of left the table 3, showed significant and high correlation values of the two models using a Fisher's number of standard and the adjusted correlation coefficient. This study showed that there is no reason to reject the second hypothesis. With the exception of the between bid ask spread variable, all of the variables are significant. So between the dependent variable (Tobin index) and value of transactions variable, number of transactions and institutional ownership, positive and significant relationship and between these variables and the bid ask spread, and turnover transaction existed negatively correlated.

Comparison of Models

In this study in addition to hypotheses test, relationship to performance criteria (return on assets and Q Tobin's) compared with the stock liquidity. The purpose of this comparison is to answer the question which performance criteria are more suitable for such research, to be used in future research. Perhaps, can be comparable these two performance criteria to a data correlation matrix (the correlation coefficient I sequal to 54%) justified. Before that compare these two criteria, it must be one of the limitations enumerating, and then to awareness of the limitations compare. Should be considered in the present study to measure these criteria used from the accounting information, so because the values are not using the current values, may be these parameters vary difference with actual values. In order to evaluate the assumptions of linear regression, the normal component disruption and an isotropy of variance test (Wait test) and its lack of correlation disruption were tested. Only to eliminate the correlation between the errors (serial correlation) of variables in the first stage regression is used along with other independent variables. The results reported in Table 3, the values like Fisher statistics, correlation and adjustment of Durbin-Watson test (serial correlation test) show that Q Tobin's index is higher the reliability than of the return on assets in the relationship between firm performance and liquidity. Significant and independent variables coefficients also it's confirmed. The coefficients standard error indicates that the uncertainty in for instance the true coefficient of the variables in the Tobin index is lower (Startz, 2009). For example, in return on asset model from six variables tested, only four variables were significant. Yet the other model five variables were significant. Also the study of the coefficients of the two models shows that the Q Tobin's index model coefficients have a stronger relationship with liquidity measures.

Table 3. The resulted from hypotheses by used multivariable regression models

Explanatory variables	Coefficients	Standard error	T Statistics	Significant	Coefficients	Standard error	T Statistics	Significant
Constant	.09230600	0.007446	12.397	.000	1.19614300	0.041008	29.169	.000
Bid Ask Spread	.00215000	.0012130	1.772	.076	-.00951600	.0098520	-9.966	.334
The relative volume of transactions	.00349400	.0075800	.461	.645	-.39129800	.0627060	-6.240	.000
Dollar Volume	.00000002	.0000000	3.674	.000	.00000035	.0000000	7.494	.000
Number of Transaction	.00000288	.0000004	8.030	.000	.00000997	.0000028	3.594	.000
Institutional ownership	.00046300	.0001150	4.024	.000	.00160700	.0006800	2.362	.018
Rgrsyv their AR(1)	.72878400	.0130970	55.646	.000	.56463500	.0096230	58.676	.000
F	632.266		.000a		670.464		.000a	
Adjusted R Square	0.5515597				0566081			

Durbin-Watson	1.813516		2.415238	
Akaike info criterion	-2.169831		1.895059	
Schwarz criterion	1.908769		-2.156121	
Dependent Variable	a Dependent Variable : return on asset		aDependent Variable : Q Tobins	

Despite the differences, these two models are very similar. So that both the performance variable with bid ask spread relationship is not significant, and that type of direct relationship between these performance variables to variables value of transactions, number of transactions and the institutional ownership, and even still the same amount.

The only major difference between the two model scan be related to the relative volume of transactions, where return on assets model is no significant, but in Q Tobin's this variable is significant. The other point is that regardless of the lack of a significant bid ask spread, its opposite to the Tobin index model observed. Akaike Info criterion and Schwarz criterion two models are used to compare the explanatory power so that, if the absolute values of the model be lower from other, that model is a better (Startz, 2009). As can be seen absolute values of this parameter sin Tobin index model less than the return on assets. According to the objects presented, the results are more reliable of Tobin index can be indicators in amounts used the numerator the index, because its market value has been considered. Thus can be say, in this study Q Tobin's index appropriate than return on assets for the criteria corporate performance because its related to the values of the current (market).

5. Conclusions

This study sought to evaluate the relationship between company's performance criteria and their stock liquidity. Based on the two theories of agency and feedback stated that better performance will lead to higher liquidity. The better performance of based on agency theory, due solution which used for line up owns and manager benefits. On the other hand, based on feedback theory in the absence of agency problems, better performance cause creation demand from informed investors and increased stock liquidity, that this factor as positive feedback that will affect performance again.

In this study, the relationship between two performance criteria including return on assets and Q Tobin index, and liquidity in the form of two hypotheses were tested. In order to 770 observation of company-year were analyzed. Preliminary, results of the descriptive statistics and correlation indicates a strong relationship between the variables. Using multiple linear regressions, two hypotheses were tested. After a test confirmed the hypothesis was found, there was a significant relationship between firm performance and liquidity.

Thus the research literature and existing investigations, such as Fang et al, or Wang research, and other research cited earlier on this thread this study, this study showed that in the Iran capital market based on agency theory and feedback, there are direct and significant relation between the performance of listed companies on the Tehran Stock Exchange and liquidity.

Finally, by compare and analysis of two criteria of return on assets and Q Tobin's index showed, while the two performance criteria are similar, but Q Tobin's index is better for performance measure in these studies. The advantage of using the market value (current) was in the calculation of coefficient. Seem the results of the activities and the company investments returns should be sought the current value. Thus, for future research is proposed for measurement of performance use such as index.

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